

**LESSON**
**3**

# Exponents and Roots

## Puzzles, Twisters & Teasers: Be a Math Hog!

Write the correct exponents to show each number in scientific notation. Then solve the riddle.

**I**  $-580,000 = -5.8 \times 10\text{—}$

**E**  $26,400,000 = 2.64 \times 10\text{—}$

**N**  $0.000135 = 1.35 \times 10\text{—}$

**A**  $0.000002 = 2 \times 10\text{—}$

**C**  $155,000,000 = 1.55 \times 10\text{—}$

**H**  $0.00000014 = 1.4 \times 10\text{—}$

**N**  $0.0003 = 3 \times 10\text{—}$

**M**  $7,800,000 = 7.8 \times 10\text{—}$

**L**  $0.0467 = 4.67 \times 10\text{—}$

**B**  $3500 = 3.5 \times 10\text{—}$

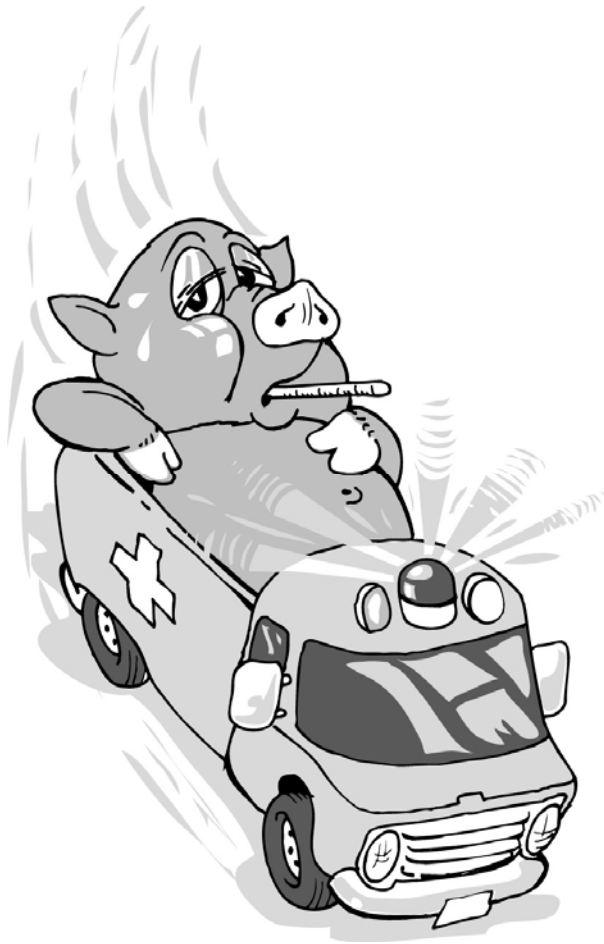
**U**  $900 = 9 \times 10\text{—}$

**Y**  $1,000,000,000 = 1 \times 10\text{—}$

How did the pig get to the hospital?

$\frac{5}{-4}$   $\frac{-6}{-6}$

$\frac{-7}{-6}$   $\frac{6}{3}$   $\frac{2}{-2}$   $\frac{-6}{-4}$   $\frac{8}{7}$



## Challenge

Scientific Notation	AU
$5.79 \times 10^7$	0.4
$1.082 \times 10^8$	0.7
$1.496 \times 10^8$	1.0
$2.279 \times 10^8$	1.5
$7.784 \times 10^8$	5.2
$1.4294 \times 10^9$	9.6
$2.875 \times 10^9$	19.2
$4.5043 \times 10^9$	30.1

- about 9.6 times
- Neptune's distance from the Sun is about 77.8 times that of Mercury.

## Problem Solving

- $1.5 \times 10^{12}$
- 1,000,000,000
- $2 \times 10^{-8}$  m
- 0.002
- B
- G
- A
- F
- D

## Reading Strategies

- 5 places
- to the right
- negative
- $7.8 \times 10^{-5}$
- 8 places
- to the left
- positive

## Puzzles, Twisters & Teasers

- |       |       |
|-------|-------|
| I. 5  | E. 7  |
| N. -4 | A. -6 |
| C. 8  | H. -7 |
| N. -4 | M. 6  |
| L. -2 | B. 3  |
| U. 2  | X. 9  |

## I N A H A M B U L A N C E

## Answers for Lesson 4

### Practice A

- $7.95 \times 10^9$

- $2.3668 \times 10^6$
- $6.249 \times 10^4$
- $3.99 \times 10^{-6}$
- $1.22 \times 10^3$
- $1.8 \times 10^4$
- 1.86 times
- $5.91 \times 10^{24}$
- $1.0 \times 10^7$

Sources for question 7)

[www.bloomingtonmn.org](http://www.bloomingtonmn.org)

Sources for questions 8 and 9)

[www.ask.com](http://www.ask.com)

### Practice B

- $6.634 \times 10^5$  sq mi
- $6.220 \times 10^0$  times
- $\$5.368 \times 10^9$
- $6.6 \times 10^8$  times
- $2.7075 \times 10^8$  cu yd

### Practice C

- $1.56 \times 10^5$  sq mi
- $3.66 \times 10^7$
- $2.45 \times 10^3$  km
- $5.6 \times 10^0$
- $9.2 \times 10^{10}$  pounds
- 8.3 minutes

Sources for questions 1, 2, and 4:

[www.infoplease.com](http://www.infoplease.com)

Source for question 3:

<http://solarsystem.nasa.gov.planets>

Sources for question 5:

<http://nppga.org/consumers/funfacts>

and

<http://ezinearticles.com>

Source for question 6:

[www.universetoday.com](http://www.universetoday.com)

### Review for Mastery

- $(1.8 \times 10^{14}) \div (4.6 \times 10^9)$   
 $(1.8 \div 4.6) \times (10^{14} \div 10^9)$   
 $0.391 \times (10^{14} \div 10^9)$   
 $0.391 \times 10^5$   
 $3.91 \times 10^4$